

## How we reached into space

By Cmdr. Brian Julian

USS Dwight D. Eisenhower (CVN 69) at-sea Sailors and embarked Carrier Air Wing (CVW) 7 participation in the memorable reenlistment ceremony required hard work and planning. Linking the ship-air wing at sea in the Indian Ocean, the International Space Station in orbit several hundred miles above Earth, and families and news media on the ground in Norfolk, Va., took precise coordination and technological know-how to ensure the success of the historic reenlistment ceremony from space.

With only a 19-minute video connection window of opportunity with the ISS due to orbital patterns, all the technical coordination had to be solidified days before the event.

A video teleconference from a ship at sea requires bridging at a shore-based communications facility because the unique transmission equipment installed on a ship is not directly connectable to the commercial VTC suites widely used by other organizations. To effect connection to the ISS, several shore-based "hops" were necessary.

The transmission method used by the Ike was over a Super High Frequency (SHF) satellite link to the Naval Computer and Telecommunications Area Master Station Atlantic (NCTAMS LANT) in Norfolk, Va.

Once the ship and the communications station are connected by satellite (referred to as the path), a number of different circuits used in a variety of applications can be passed over the path and transmitted further all over the world using a system called Timeplex. Timeplex is a multiplexing system that takes different types of data feeds, for example, voice, data, serial, T1 lines and Ethernet, and merges them into a single data feed for wide transport.

The ship's VTC signal was placed on the SHF transmission path to NCTAMS LANT, which was then passed over a Timeplex internodal link to NCTAMS LANT Detachment Hampton Roads to enable the signal

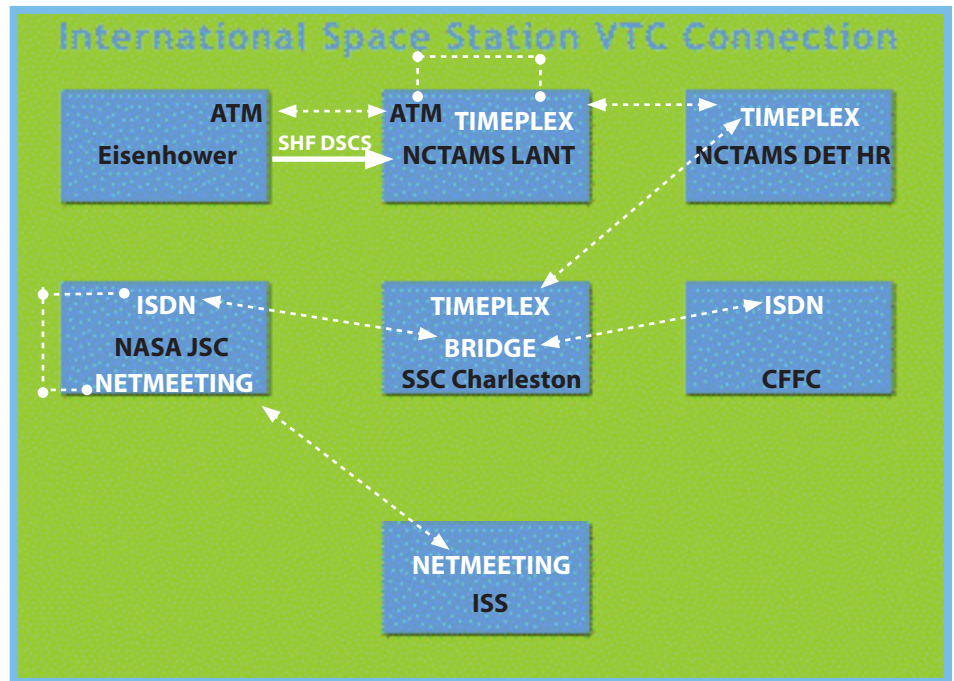


Figure 1. International Space Station VTC Connection.

to be further transferred to the bridge.

The Space and Naval Warfare Systems Center (SSC), Charleston, S.C., served as the VTC bridge that connected all participants together.

The NASA Johnson Space Center established a link with SSC Charleston's bridge through an Integrated Services Digital Network (ISDN) phone line. Norfolk's Fleet Forces Command also used an ISDN connection to the SSC Charleston bridge to enable the families of the reenlisting Sailors and Norfolk area media to watch the reenlistment, and later talk to Sailors.

Once all the technical connections were made and participants verified

good audio and video with each other, NASA completed the circuit by patching through a Windows NetMeeting video with the astronauts into the VTC. Figure 1 illustrates the configuration.

The reenlistment was a huge success, and there was even time left for the astronauts to answer questions from the reenlistees and news media.

*Cmdr. Julian is the combat systems officer for the USS Dwight D. Eisenhower. For more information go to the Ike's Web site at <http://www.eisenhower.navy.mil>.* CHIPS

This unique ceremony was made possible by an extraordinary team of professionals from the USS Dwight D. Eisenhower and each of the organizations listed below.

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Lt. Cmdr Carla McCarthy - Public Affairs Officer

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Cmdr. Zig Leszczynski - Space Cadre

### NASA Johnson Space Center

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### SSC Charleston

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